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BEFORE THE STATE OF WASHINGTON  
ENERGY FACILITY SITE EVALUATION COUNCIL

IN RE APPLICATION NO. 99-1

EXHIBIT \_\_\_\_\_ (JP-T)

SUMAS ENERGY 2 GENERATION  
FACILITY

**APPLICANT'S PREFILED REBUTTAL TESTIMONY**

**WITNESS : JEREMY PRATT**

**Q. Please state your name.**

A. Jeremy Pratt

**Q. What is your position?**

A. I am a Senior Associate at URS/Dames & Moore, based in the Seattle office. My consulting practice includes greenhouse gas emission and offset issues.

**Q. Please describe your background and education?**

A. I earned a B.A. in interdisciplinary studies from The Evergreen State College in 1977 and a M.S. in Environmental Science from Washington State University in 1979. My

EXHIBIT \_\_\_\_ (JP-RT)

JEREMY PRATT

PREFILED REBUTTAL TESTIMONY - 1

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Seattle, Washington 98101-3099  
(206) 583-8888

1 Master's program was supported by a Fellowship from the Energy Research and  
2 Development Administration and included an emphasis in energy sciences. My thesis  
3 analyzed the design, siting, impacts and economics of coal-fired power systems in  
4 alternative applications. I have been employed as a scientist in the consulting field  
5 since 1976, focusing on natural resources management and planning. I have served as  
6 a principal or officer with several firms and, most recently, as a Senior Associate with  
7 URS/Dames & Moore since 1995. I developed a consulting practice in advising utility  
8 and non-utility generators on greenhouse gas offsets and mitigation projects during the  
9 early 1990's and have since consulted on such projects for facilities sited in the United  
10 States, Mexico, Indonesia and Australia. I created the Mission Energy Company  
11 Carbon Management and Mitigation Program Global Strategic Plan in 1993.  
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24 I also founded the Institute for Human Ecology in 1982 and have served on its Board  
25 and as its Executive Director since that time, directing a research program involving  
26 more than 70 Fellows in more than 20 nations on policy and natural resource  
27 management issues of human-environment relationships, achieving a sustainable  
28 balance between complex human and natural systems, evaluation of resource carrying  
29 capacity, and environmental conflict and security issues.  
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38 A copy of my resume is provided as Exhibit \_\_\_\_ (JP-1).  
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42 **Q. What has been your role concerning the greenhouse gas issues relating to the**  
43 **Sumas Energy 2 (SE2) project?**  
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1 A. I was the primary author of the *Sumas Energy 2 Generation Facility Greenhouse Gas*  
2 *Offset Strategic Plan* (hereafter the "*Offset Strategic Plan*"). I also participated in  
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4 meetings between SE2 and representatives of the Energy Division of the Department  
5 of Community Trade and Economic Development (CTED) regarding greenhouse gas  
6 issues. More recently, I have reviewed testimony filed by intervenors concerning  
7  
8 greenhouse gas issues, and prepared this rebuttal testimony. In preparing this rebuttal  
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10 testimony, I have conferred with Eric Hansen of MFG, Inc., David Montgomery from  
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12 Charles Rivers Associates, and George Hinman, recently retired as director of the  
13  
14 Office of Applied Energy Studies at Washington State University, regarding various  
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16 aspects of the issues addressed.  
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22 **Q. What is the subject of your rebuttal testimony?**

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24 A. My rebuttal testimony will focus on greenhouse gas issues. In particular, I will respond  
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26 to portions of the testimony submitted by Richard Gammon (CFE), Bradley Smith  
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28 (CFE), Tony Usibelli (CTED) Nancy Hirsh (NWECA), Philip Mote (NWECA), and Peter  
29  
30 West (NWECA).  
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### 35 **Greenhouse Gas Regulation**

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37 **Q. Several witnesses referred to the Kyoto Protocol. Can you explain what that is?**

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39 A. The Kyoto Protocol is an international agreement negotiated in December 1997. The  
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41 Protocol establishes targets for reductions in greenhouse gas emissions to be met by  
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43 38 industrial nations during the 2008-2012 period. For example, the Protocol  
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45 establishes a target for the United States of reducing emissions to 7% below 1990  
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47 emissions levels. Although the Kyoto Protocol negotiations occurred in 1997, a

1 sufficient number of countries have not yet ratified the Protocol to make the Protocol  
2 effective. The United States signed the Protocol in 1997, but the Senate has not yet  
3 ratified it. As Dr. Gammon testified, the Protocol is "hopelessly mired in Congress."  
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9 **Q. Does the Kyoto Protocol impose any greenhouse gas mitigation requirements on**  
10 **wholesale power generators in the United States?**  
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12 **A.** No. As I have explained, the Kyoto Protocol does not yet have any binding force on  
13 United States. Assuming that the Senate eventually ratifies the Protocol, it would then  
14 require the United States to reduce its emissions to 7 percent below the 1990 emission  
15 rate within the 2008-2012 timeframe. Presumably following ratification, the federal  
16 government would develop and implement a broad-based policy designed to achieve  
17 the Protocol's target. Although such a policy would undoubtedly address electricity  
18 generation in some way, the details are speculative. Dr. Gammon's implication that  
19 ratification of the Kyoto Protocol by the United States would result in a requirement  
20 that every individual project in the country offset all of its greenhouse gas emissions is  
21 an unwarranted prejudgment of policy and regulatory decision making. In fact, a  
22 number of "flexibility mechanisms" are being considered which may be used to meet a  
23 country's obligations by means other than reducing CO2 emissions. (Incidentally,  
24 TransAlta states that is relying upon the use of these "flexibility mechanisms" in  
25 offering to achieve net-zero emissions for its Canadian operations as a whole.)  
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42 A number of scenarios have been developed, and all of them allow for substantial  
43 continued use of fossil fuels for a significant period of time. None require zero net  
44 emissions in the near term. Even if no flexibility mechanisms were employed, the U.S.  
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1 strategies for compliance with the Kyoto Protocol prepared by the Clinton  
2 Administration and the U.S. Energy Information Administration (EIA) would still  
3 authorize emissions of about 1,250 M tons CO2 equivalent per year. With flexibility  
4 mechanisms, higher levels of carbon emissions could be allowed in the U.S. Thus, the  
5 policy question is not whether to eliminate emissions, but how to manage the  
6 reduction in emissions from baseline levels to a level consistent with the United State's  
7 possible international obligations.  
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16 Studies by the Clinton Administration, by the EIA, and by Charles River Associates all  
17 agree that for the next decade or more the single largest and most cost-effective option  
18 for reducing emissions would be the replacement of electricity generated by existing  
19 coal-fired plants with electricity from new natural gas-fired combined cycle projects,  
20 such as the SE2 project. Were the federal government to take this approach, it might  
21 encourage the development of natural gas-fired power plants, rather than placing  
22 "mitigation" or "offset" requirements on them. In fact, the EIA's scenario in which  
23 most U.S. obligations are met through domestic actions contemplates exactly such a  
24 fuel switch and shows that the contribution to be made through "generation efficiency"  
25 is to come largely from the technology proposed to be installed in the SE2 facility.  
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36 Demand reductions play a relatively small role, because so much energy conservation  
37 has already been achieved in the U.S. over the past 25 years. The EIA estimates that  
38 gas fired generation will need to quadruple in the U.S. to displace coal-fired  
39 generation. Indeed, the less the final agreements under the Kyoto Protocol allow  
40 flexibility mechanisms, the greater will be the United States reliance upon natural gas-  
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1 fired electric power to meet its obligations. Under such a scenario, combined cycle  
2 units, such as the SE2 facility, are especially to be preferred.  
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6 For more detail on these issues, please refer to a report from Dr. David Montgomery,  
7 attached as Exhibit \_\_\_\_ (JP-2).  
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12 **Q. In her testimony, Ms. Hirsh refers to policy statements by President Clinton and**  
13 **Governor Locke concerning global warming. Does either the federal**  
14 **government or Washington State have any laws or regulations that regulate**  
15 **greenhouse gas emissions from power plants?**  
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20 **A.** No. Neither the federal government nor Washington State has any statutes or  
21 regulations that limit greenhouse gas emissions, or require offsets or mitigation for  
22 those emissions. This is an important point because, absent such a regulation, there is  
23 no national policy that could create a level playing field by applying comparable  
24 measures to *all* greenhouse gas-emitting facilities. Such a policy is needed to insure  
25 that greenhouse gas offset requirements do not have the counterproductive result of  
26 unintentionally *increasing* greenhouse gas emissions, as I explain further in my  
27 testimony below.  
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39 **Q. Has EFSEC ever regulated greenhouse gas emissions or imposed a greenhouse**  
40 **gas mitigation requirement on a power plant certified in Washington?**  
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42 **A.** I have spoken with EFSEC staff about this; I also consulted on the applications for the  
43 Chehalis, Satsop and Northwest Regional Power Facility Site Certification  
44 Agreements. To my knowledge EFSEC has never limited greenhouse gas emissions or  
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1 imposed a greenhouse gas offset or mitigation requirement through the site  
2 certification process. In connection with the Chehalis project, EFSEC required the  
3 applicant to prepare a report on low-cost greenhouse gas mitigation measures, and I  
4 understand that, in connection with the recent hearings concerning an amendment to  
5 the Chehalis site certification agreement, Tractebel stipulated to spending \$5000 on a  
6 study addressing greenhouse gas issues.  
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14 **Q. In your opinion, does it make sense to address greenhouse gas issues in facility**  
15 **siting proceedings?**  
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18 A. No. First, as Dr. Smith testified, climate change effects and offsets have nothing to do  
19 with where a facility is sited. Climate change is a global issue. As Mr. Mote testified in  
20 response to a question about whether the potential for future impacts warrants action  
21 to reduce CO2 emissions, "Because local CO2 emissions affect global climate, the  
22 question really must be answered from a global perspective." Greenhouse gas  
23 regulation can be meaningfully addressed only through agreement negotiated at the  
24 international level, ratified at the national level, and implemented broadly among the  
25 community of nations. A facility siting proceeding such as EFSEC's applies existing  
26 regulation to a particular generating project. Once a broader policy is established, a  
27 facility siting proceeding would be the appropriate level for such broader regulation to  
28 be implemented; but the case-by-case siting process is not an appropriate level at  
29 which to initiate regulation .  
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45 Second, greenhouse gas emission reduction presents a major public policy question  
46 that should be resolved through the development of a reasoned overall policy. The  
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1 demand for electric power is relatively inelastic. The Northwest Power Planning  
2 Council is forecasting a need for significant growth in generating capacity to meet the  
3 region's needs without large increases in imports. This demand will be met by the least  
4 cost generating units available. In the near term, that means that most of the demand  
5 for electricity will be met by burning fossil fuels, and greenhouse gases will be emitted.  
6 (Dr. Montgomery's report briefly summarizes why some of these units will be coal-  
7 fired resources that could be displaced by the SE2 facility.) The greenhouse gas  
8 management issues raised by this set of circumstances are clearly of social and  
9 environmental concern, but they are not *siting* issues, since both the impact and its  
10 mitigation or offset are site-insensitive. As the larger social and environmental policy  
11 issues are resolved, compliance with any resulting regulation should be ensured in the  
12 siting process, but the siting process should not be appropriated as a tool to create  
13 such policy where it does not already exist.

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29 The problem with using the siting process this way is that it will result in regulation on  
30 a piecemeal basis, because the process is necessarily focused on one particular project  
31 at a time. Mr. Usibelli's testimony illustrates our concern; while he states his belief that  
32 SE2 should be made to meet mitigation standards comparable to Oregon's, he later  
33 qualifies his recommendation to state that this requirement should be applied to new  
34 natural gas-fired combined cycle combustion turbines *as a class*. Indeed, the scope of  
35 the policy need is broader than that: not just new natural gas-fired combined cycle  
36 combustion turbines, nor even all new natural gas generation of whatever technology,  
37 but *all* greenhouse gas emitting activities, new and existing, need to be brought under the  
38 umbrella of a comprehensive policy and regulation.



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3 As a public policy matter, the state government and the federal government must  
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5 consider how to reduce greenhouse gas emissions in broad terms. Should there be  
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7 subsidies to encourage conservation, renewable energy sources, and alternative modes  
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9 of transportation? Should there be subsidies to encourage natural gas-fired power  
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11 plants as an alternative to coal plants in the near term? How should growth and  
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13 technologies in the electric power generation sector be balanced against the  
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15 transportation sector in allocating greenhouse gas emissions? Should the government  
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17 penalize and discourage emission of greenhouse gases by requiring all emission  
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19 sources – not just power plants – to fund mitigation and offset projects? Should the  
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21 government finance offset projects of its own? These questions and others must be  
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23 considered and resolved in the process of developing a coherent and comprehensive  
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25 policy, not on an individual basis in a siting process that applies only to one project  
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27 and one type of greenhouse gas emission sources in the state.

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30 Third, imposing mitigation requirements on an ad hoc basis may well be  
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32 counterproductive. Without a generally applicable and consistently applied public  
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34 policy concerning greenhouse gas emissions, the imposition of mitigation or offset  
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36 requirements in the EFSEC adjudicatory process could penalize the newest and most  
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38 efficient power facilities as they seek permits, possibly placing them at a disadvantage  
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40 relative to older, less efficient, higher-emitting facilities. In other words, case-by-case  
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42 mitigation may well help existing less efficient fossil fuel plants continue to operate. A  
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44 policy that puts a price on carbon emissions from just one kind of source can actually  
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46 increase emissions if that source is chosen unwisely. This is the probable outcome of  
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1 applying an offset standard selectively to new combined cycle natural gas generating  
2 units as they come before EFSEC. With respect to new capacity in Washington, in  
3 particular, case-by-case mitigation through the EFSEC certification process may  
4 simply encourage more developers to avoid the EFSEC process by constructing 248  
5 megawatt plants that can be permitted without any reference to greenhouse gas  
6 offsets.  
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14 **Q. Dr. Gammon testified that the goal should be "no increase in CO2 emissions" at**  
15 **all levels "for Washington State, the Pacific Northwest and the USA." Do you**  
16 **agree with that recommendation?**  
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20 **A.** No. Dr. Gammon testifies from the point of view of a climate scientist, without  
21 balancing the many public interests in resources and economics at stake. The ultimate  
22 public policy on this national and international issue will more likely reflect a balance  
23 of emission increases allowed in some regions and sectors, and reductions in others,  
24 resulting in a *net* reduction in emissions as provided under the Kyoto Protocol. It  
25 would be inappropriate to extrapolate from such an overall *net* goal to a zero net  
26 emissions rule applicable to every individual actor within a highly complex set of  
27 interacting activities, economies, and regions. Likewise, Dr. Gammon's implication  
28 that SE2 should be required to produce zero net greenhouse gas emissions because the  
29 City of Seattle and the State of New Jersey have adopted zero net emissions goals is  
30 not logical. Those policy goals apply to entire jurisdictions – a major city, an entire  
31 state – not to individual economic actors within each jurisdiction. Until such time as  
32 state or federal law establishes an overall policy designed to regulate greenhouse gas  
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1 emissions, it is highly speculative as to whether goals such as Dr. Gammon suggests  
2 are likely to be implemented.  
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6 **Q. Some witnesses have stated or implied that EFSEC should require SE2 to**  
7 **provide greenhouse gas mitigation equal to the mitigation that would be**  
8 **required for a similar project in Oregon. Do you agree with that**  
9 **recommendation?**  
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14 **A.** No. First, the Oregon standard was enacted by the Oregon legislature after an  
15 extensive public policy review involving all stakeholders over a period of years. Along  
16 the way, the Oregon Energy Facility Siting Task Force issued a report to the Governor  
17 and Legislative Assembly in 1996 urging the adoption of a statutory climate change  
18 standard, and the Oregon Office of Energy then issued a report on *Reducing Oregon's*  
19 *Greenhouse Gas Emissions*. Policy choices were carefully framed, deliberated, and  
20 recommendations or decisions were made in a series of open public processes and  
21 forums. Washington has not undergone any comparable process with respect to policy  
22 formation and legislation on the subject of greenhouse gas regulation.  
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34 Absent such a public process, informed decision-making and the resulting policy  
35 framework embodied in law and regulation, it would be unfair and highly irregular for  
36 a Washington regulatory agency to require SE2 to pay between \$5 and \$35 million  
37 based on the statute and regulatory framework in a neighboring state. Such a  
38 requirement would penalize SE2 relative to all other projects that have been sited in  
39 Washington, as well as all of future projects being built in Washington that do not  
40 satisfy the 250 MW threshold for EFSEC jurisdiction. As I have explained, such case-  
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1 by-case offset requirements could also be counterproductive because it may  
2 discourage construction of newer, more efficient, less polluting projects.  
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6 As to the Oregon standard itself, it has several problems which Washington may do  
7 well to carefully consider and avoid. Mr. West testified that the Oregon law is a  
8 “requirement to offset actual CO2 emissions,” yet this characterization is directly  
9 contradicted by his testimony that the required offset must be provided and paid for  
10 “up front.” Up-front offset addresses emissions calculated to occur over the life of the  
11 plant and, by definition, these have not yet occurred. Hence, they can hardly be called  
12 “actual emissions.” In fact, such emissions may never occur, and the Oregon system  
13 shifts that risk to the generator. Further, as explained in SE2’ *Greenhouse Gas Offset*  
14 *Strategic Plan*, the Oregon approach flies in the face of the emerging international  
15 consensus, such as the Kyoto Protocol, which assigns *zero value* to the present  
16 purchase of future offsets (there is no provision for borrowing against emission  
17 reductions that would take place beyond the period to which the Protocol applies,  
18 which ends in 2012). It is at least premature to require offsets that may not be  
19 recognized under national or international policies that have not yet been agreed or  
20 enacted. The Oregon approach also anticipates future policy developments such as  
21 rules and mechanisms for use of the Clean Development Mechanism and for obtaining  
22 credit for greenhouse gas sinks. Unless these rules and mechanisms specifically  
23 legitimate the type of offsets required under the Oregon approach, any such offsets  
24 will be valueless even if they do include emission reductions that occur prior to 2012.  
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1 Mr. West's discussion of the economics of offset projects is also misleading. The issue  
2 is not whether a developer may wish to take a risk on buying more expensive  
3 greenhouse gas mitigation in future years, but whether a more desirable (less  
4 expensive) project may be initiated this year *and funded over a period of years* to  
5 develop the required offset on a year-by-year basis. Such a strategy clearly has a lower  
6 present value cost than does the alternative of paying for the sum of all those years of  
7 costs in the first year. Mr. West's testimony that the \$100,000 per year payment would  
8 fund less CO2 mitigation as costs increase over time ignores the reality that offset  
9 projects have duration in time, the costs associated with them are spread over that  
10 duration, and funding of a particular project over such a period would not be expected  
11 to incur higher annual costs just because the average cost of *new* offset projects is  
12 increasing over that period.  
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26 Mr. West also ignores the fact that under the Kyoto Protocol, future emission  
27 reductions can only be used for credit in the period in which they are generated, so  
28 that the time value of money invested in these emission credits until they can be used  
29 must be included in their cost.  
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36 As described in my background statement, I have consulted since 1990 with non-utility  
37 generators who sought voluntary carbon offsets. Their purposes have been to build  
38 more environmentally friendly projects, as is the case with SE2, and to anticipate  
39 future greenhouse gas regulation. However, the Oregon standard allows only *future*  
40 offsets to be credited. This provision creates a strong disincentive to voluntary offset.  
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47 It penalizes generators who have shown good will in voluntarily offsetting their carbon

1 dioxide emissions, banking credits in anticipation of future regulation. There is great  
2 irony in urging SE2 to *voluntarily* follow the example set by a plan which does not  
3 credit voluntary actions.  
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8 **Q. Mr. West states that “meeting the Oregon standard has extremely minor cost**  
9 **impacts. Complete mitigation is preferable, economically achievable and well**  
10 **within the range of competitiveness.” What is your response to these**  
11 **statements?**  
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16 **A.** Competitiveness is a very vague term, but from the context I take it that Mr. West  
17 means that the offsets he proposes would not affect decisions about building and  
18 operating SE2. Even if Mr. West’s contentions were true, they would not constitute a  
19 justification for offsets as a means to protect the environment or reduce global climate  
20 change. First, it is not the magnitude but the direction of the effect of offsets that  
21 matters. If construction of natural gas combined cycle powerplants like Sumas will  
22 reduce total greenhouse gas emissions, their construction should be encouraged as a  
23 matter of climate change policy. Any offset, however small, is a move in the wrong  
24 direction. Second, if it were true that the offsets will have no effect on the decision to  
25 build Sumas, the offset cannot be justified on environmental grounds, because it will  
26 also have no effect on greenhouse gas emissions from electricity generation – the  
27 powerplant will still be built, it will still burn natural gas, and it will be operated in the  
28 same manner. Mr. West’s argument reduces to justifying offsets as a tax, which he  
29 apparently believes should be levied by EFSEC in any amount that is smaller than the  
30 expected net profits of the project’s owners. However, the legislature has not  
31 determined that such a tax is appropriate.  
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3 **Q. In his testimony, Mr. Usibelli describes that the applicant's proposal to fund**  
4 **offset and mitigation programs in the amount of \$100,000 per year for 10 years**  
5 **as "a very small contribution." Do you agree with Mr. Usibelli?**  
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9 **A.** No. In fact, I was surprised by Mr. Usibelli's reaction to SE2's proposal. SE2's  
10 voluntary commitment is unprecedented in the State of Washington. Since SE2 made  
11 its offer, Tractebel has offered to provide \$5000 to fund a study addressing  
12 greenhouse gas issues in connection with the proposed Chehalis site certification  
13 amendment. SE2 has already spent more than \$20,000 studying greenhouse gas issues  
14 and developing its *Offset Strategic Plan*. SE2 is now offering not merely to study but  
15 to fund offset projects, and its offer is 200 times the amount of the Tractebel study  
16 offer. Considering that this is a voluntary contribution, not required by any state or  
17 federal regulation, I think it is both generous and substantial. As Dr. Smith testified,  
18 the only reason for SE2 to consider doing more than it has already offered would be if  
19 the company wished to set even more of a leadership example than it already has.  
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33 **Q. Mr. West and Ms. Hirsh were also critical of the types of projects identified in**  
34 **SE2's *Offset Strategic Plan*. What is your response to their criticism?**  
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37 **A.** SE2's *Offset Strategic Plan* presents a range of potential projects. These are not  
38 intended to be final proposals, but rather a representative range from which the  
39 applicant and EFSEC could choose. SE2 is quite willing to reconsider its review of  
40 these potential projects and consider other projects. SE2 has offered research projects  
41 because there is no Washington regulatory program that limits the range of possible  
42 offset projects to exclude research. SE2 believes that funding research might provide  
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1 long-run benefits that could far exceed those of other offset projects. If EFSEC  
2 wishes to use Mr. West's or any other project evaluation criteria, SE2 has no  
3 objection..  
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8 **Q. In Mr. West's testimony, he also criticizes the Offset Strategic Plan because it**  
9 **does not commit to specific CO2 offset goals. What is your response to this**  
10 **criticism?**  
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13 **A.** Again, Washington has no requirement that a power facility – or any other greenhouse  
14 gas emission source – offset its emissions. Neither the Washington Legislature nor any  
15 regulatory agency has established any sort of regulatory framework for designing and  
16 implementing greenhouse gas offset plans. Consequently, there is no regulatory  
17 requirement to commit to specific CO2 offset goals. Rather than basing a program on  
18 prospective performance of a carbon offset program, which Mr. West's testimony  
19 makes clear entails risk (and which in Oregon's case is born by the state, according to  
20 Mr. West), SE2 has proposed to provide funding in a sum certain amount. The risk we  
21 are speaking of arises because the range of possible offset projects offer a  
22 corresponding range of certainty in their potential risks and benefits. Some projects  
23 may be fairly certain in the amount of offset they would achieve, others may be less  
24 certain but may at the same time have a much greater potential payoff. It is possible  
25 that the funding SE2 has proposed, if it were applied to research, could lead to  
26 enhanced abilities to offset greenhouse gas emissions in magnitudes far exceeding the  
27 emissions of the SE2 facility. That would depend upon the success of the project  
28 funded, something that cannot be known at this time.  
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**SE2's Greenhouse Gas Emissions**

**Q. In Mr. West's testimony, he disagrees with your calculation of the greenhouse gas emissions that will be associated with the SE2's greenhouse gas emissions. What is your response?**

**A.** As explained in the *Greenhouse Gas Offset Strategic Plan* and the testimony of Eric Hansen, we calculated SE2's greenhouse gas emissions to be 0.83 pounds per kilowatt hour (lbs/kWh). I believe that is a reasonable approximation of the actual greenhouse gas emissions that will be associated with operating the facility.

Mr. West argues that if the SE2 project were being built in Oregon, it would be required to calculate its emissions according to the regulatory framework established in Oregon, and that doing so would produce a different result. My primary response to Mr. West is that the facility is not being sited in Oregon and that the Oregon regulatory framework does not apply. The *Greenhouse Gas Offset Strategic Plan* was not intended to submit the SE2 facility to Oregon regulation, nor did we try to use Oregon's methods for calculating emissions in that plan. We used reasonable operating parameters to calculate a sound estimate of greenhouse gas emissions, and applied the Oregon monetary path calculations to that estimate. Mr. West and I plainly disagree on the application of Oregon's calculation methods to the SE2 facility, but in my view it has little relevance to the question of siting that facility in Washington.

**Q. Dr. Gammon and Mr. West and have testified that the proposed SE2 project will result in a 3% increase in greenhouse gas emissions for Washington. Do you agree with their statement?**

1 A. No. Their statement assumes without any proof or rationale that SE2's emissions will  
2 be additive. SE2 predicts that it is more likely that the plant will displace other sources  
3 of greenhouse gas emissions, at least at non-peak times, and therefore, replace the  
4 emissions that would have come from those sources. The sources most likely to be  
5 displaced are the older, less efficient gas plants or higher-emitting coal plants. If so,  
6 SE2's operation would result in a net reduction in greenhouse gas emissions. As  
7 documented in the *Offset Strategic Plan*, there are situations in which power  
8 purchases from the SE2 facility could be counted as part of another entities offset for  
9 greenhouse gases. For example, B.C. Hydro's *Comprehensive Greenhouse Gas*  
10 *Action Plan* describes purchasing electricity from "higher-efficiency gas-fired  
11 generation" as part of its offset strategy.  
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24 Finally, I should note that Dr. Gammon's and Mr. West's focus on Washington state  
25 emissions misses the point that greenhouse gas regulation can be meaningful only  
26 within the context of a global protocol applied at a national scale (since nations  
27 signatory to the Kyoto Protocol make specific commitments to reducing national  
28 emissions). From the standpoint of greenhouse gas accounting within such a protocol,  
29 it makes no difference where the SE2 facility emits or displaces greenhouse gas  
30 emissions.  
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41 Q. In his testimony, Dr. Gammon acknowledged that if natural gas plants displaced  
42 coal-fired plants, there would be a net reduction in greenhouse gas emissions,  
43 but he also testified that "[i]f gas turbine plants are brought on line to augment  
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1           **a predominantly hydro-based electrical power system, as here in the Pacific NW,**  
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3           **the net CO2 emission from the region would increase." Do you agree?**

4           A.   This conclusion could be misleading if it is not framed properly. Dr. Gammon is  
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6           correct in stating that the Pacific Northwest is outgrowing its historical hydro  
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8           generation base. An increase in regional CO2 emissions is almost unavoidable in that  
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10          transition. However, it would be inappropriate to hold the SE2 facility (or any other  
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12          particular facility) accountable for that trend. The fact is, there is no more cheap, clean  
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14          hydro available to develop in the Pacific Northwest without very significant  
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16          environmental costs and high regulatory hurdles (such as the Endangered Species  
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18          Act), and there is no other substantial and mature energy resource for electric power  
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20          generation which is being proposed for license to state energy regulatory bodies  
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22          anywhere in the west in capacities that come anywhere near that of natural gas. The  
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24          type of plants that will be brought before EFSEC and placed on line will depend upon  
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26          energy resource availability and cost, technological maturity, the economics of the  
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28          competitive power generation market, and other conditions and forces that operate  
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30          upon all generators and all plants. The EIA study cited previously supports this  
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32          position, concluding that a very limited role can be played by renewable energy  
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34          resources in meeting U.S. obligations under the Kyoto Protocol. Until such time as  
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36          proposals are actually made to put non-fossil-fueled facilities on the ground in  
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38          sufficient capacities to meet the demand that is being satisfied by natural gas today and  
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40          in the near term, the Pacific Northwest has no more prospect of making a transition to  
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42          ever-lower CO2 emissions than does any other region of the country. All of this debate  
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44          is appropriate at the level at which greenhouse gas regulatory policy will eventually be  
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1 made, not at the siting level, where existing policy is applied to particular facilities to  
2 assure sound siting decisions.  
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6 **Q. You said that the SE2 facility emits less greenhouse gases than other power**  
7 **plants. Can you elaborate on that?**  
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10 **A.** Yes. Natural gas-fired combined cycle combustion turbine generating facilities  
11 generally emit less greenhouse gas per kilowatt hour of electricity produced than other  
12 generating facilities because burning natural gas emits less greenhouse gas than other  
13 fossil fuels. Also, current combined cycle technology is more efficient and therefore  
14 able to produce more electricity with the same amount of fuel than older technology.  
15 It may be useful to put SE2's emissions in perspective with national statistics. SE2 has  
16 calculated its greenhouse gas emissions to be 0.83 pounds per kilowatt hour (lbs/kWh)  
17 of electricity. According to the Department of Energy and the Environmental  
18 Protection Agency, in 1998, CO2 emissions averaged 2.112 lbs/kWh for coal-fired  
19 generators, 1.857 lbs/kWh for petroleum-fired generators, and 1.277 lbs/kWh for  
20 natural gas-fired power plants. A copy of the DOE/EPA report "Carbon Dioxide  
21 Emissions from the Generation of Electric Power in the United States" (Oct. 15, 1999)  
22 is provided as Exhibit \_\_\_\_ (JP-3). Thus, the SE2 facility represents an emission  
23 equivalent to 39 percent of a comparably sized average coal plant, 45 percent of a  
24 comparably sized average oil plant, and 65 percent of a comparably sized average gas-  
25 fired facility. The contrast is even more striking: a typical coal-fired power plant in the  
26 Northwest releases 0.26 tons of carbon per MWh, which is 2.17 times the rate of  
27 emission from typical natural gas-fired combined cycle combustion turbines, such as  
28 the SE2 facility (0.12 tons per MWh). (See data provided in Exhibit JP-2)  
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3 **Q. In his testimony, Mr. West contends that the Applicant has not calculated**  
4 **greenhouse gas emissions correctly and that the SE2 facility will emit more CO2**  
5 **than claimed. Is he correct?**  
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9 **A.** Mr. West has made a fundamental error. He apparently does not understand what is  
10 meant by the terms low heat value (LLV) and high heat value (HHV). Mr. West  
11 criticizes the SE2 facility on the basis of plant heat rate, contending that the calculation  
12 of (0.83 lb CO2/kWh) using low heat value is wrong because the natural gas fuel is  
13 not “absolutely pure.” He contends that “due to impurities and conversion chemistry  
14 actual heat values are 10-11 % higher with gas and 5-7% higher with distillate fuels,”  
15 and he indicates that the high heat value must be used in determining CO2 emissions  
16 from SE2. However, the difference between low heat value and high heat value is not  
17 related to “impurities and conversion chemistry.” Instead, it relates to whether the heat  
18 associated with condensation of reaction products (water) is (for HHV), or is not (for  
19 LHV), included in specifying the heat value. The heat rate for a plant can be correctly  
20 expressed using either LHV or HHV. The CO2 emissions can be correctly calculated  
21 based on either heat rate by using the appropriate conversion factor. The value (0.83  
22 lbs CO2/kWh) needs no correction.  
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39 **Q. Mr. West also contends, based on his analysis of heat rates, that the SE2 plant is**  
40 **less efficient (and therefore emits more greenhouse gases) than a facility in**  
41 **Vancouver, Washington, and a facility in Massachusetts. Does he make a valid**  
42 **point?**  
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A. No. Mr. West concludes that the SE2 facility design is inadequate because he is able to identify one facility in the United State that he claims is operating more efficiently (the Vancouver facility), and one other facility that is not yet in commercial operation that "could be even more efficient." Even if Mr. West's claims about the comparative efficiencies of the three projects were correct, it would hardly imply that SE2 is an inefficient facility. SE2 predicts operations within the highest range of performance. The difference in efficiency alleged by Mr. West is very minor. The SE2 plant will be a highly efficient electric generating facility. Moreover, the 7212 BTU/kWh heat rate (HHV) for SE2 lies in the range of values calculated or measured for recent gas turbine- combined cycle units. The Northwest Power Planning Council is currently using 7167 BTU/kWh as the value for planning purposes. The table below shows some recent examples.

Plant	Capacity (MW)	Location	Net Heat Rate BTU/kWh HHV	Status as of 3/99	Service date
River Road	248	Vancouver, WA	6955	In service	9/97
Pinion Pine	105	Sparks, NV	7334	In service	5/97
Berkshire Pwr.Proj.	274	Agawam, MA	6687	Under constr. as of 3/99	Expected 12/99
Bridgeport Harbor Ph2	180	Bridgeport, CT	10306	Under constr. as of 3/99	Expected Q2/99
Dighton	169	Dighton, MA	7635	Under constr. as of 3/99	

El Dorado	492	Boulder City, NV	6936	Under constr. as of 3/99	Expected Q3/99
St. Francis	250	Malden, MO	10094	Under constr. as of 3/99	Expected Q2/99

Mr. West's approach is to substitute an industry average adjustment for an actual engineering calculation of the heat rate for the specific facility in question. Whenever facility-specific data are available they are always to be preferred over industry average data, as the facility-specific data are far more likely to be accurate for the facility in question. Mr. West's approach is highly inappropriate and unsound. He makes the same error in characterizing SE2 facility's projected operation (and hence emissions) according to industry norms rather than the explicitly stated plans of the plant operator.

**Q. In their testimony, Dr. Gammon and Mr. Smith also explain that project emits as much CO2 as 500,000 cars. Is that a useful comparison?**

A. No. . It is just a metaphor; one can convert CO2 equivalents among numerous conceivable sources Implicit in this comparison, however, is the important point that many types of activities emit greenhouse gases, and a comprehensive regulatory policy should be developed that address all greenhouse gas sources in a fair and appropriate way. Imposing "mitigation" requirements on each source based on an ad hoc a case-by-case analysis is not sound public policy.

**END OF TESTIMONY**

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I declare under penalty of perjury that the foregoing testimony is true and correct to the best of my knowledge.

DATED: July \_\_\_\_, 2000.

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Jeremy Pratt